

PAIN IN THE FEET.

By CHARLES K. MILLS, M.D.

PROFESSOR OF DISEASES OF THE MIND AND NERVOUS SYSTEM IN THE PHILADELPHIA POLYCLINIC,
NEUROLOGIST TO THE PHILADELPHIA HOSPITAL, ETC.

A Clinical Lecture delivered at the Philadelphia Hospital, Nov. 12, 1887.

Reported by WILLIAM H. MORRISON, M.D.

THE first patient I bring before you this morning is suffering not from an affection of the head, with which specialists in nervous and mental diseases are supposed to be more particularly interested, but from a disease of the feet. It is my purpose to show you this and some other patients, and then make some remarks upon the subject of pain in the feet, certainly a very practical topic, and one that interests us as neurologists, as surgeons, and as general practitioners of medicine.

I will first give a partial history of this patient, and then examine her in your presence.

A. K., 38 years old, born in Philadelphia, white, a seamstress, weighs 189 pounds. Both father and mother died of phthisis; one brother is an epileptic, and another died in the insane asylum. She has been a drinking woman, and for several years has been subject to epileptic seizures.

About ten months ago, during the winter, she began to have pain in the left foot, chiefly in the heel and along the outer border of the foot. This pain was accompanied by a "pins and needles" sensation. It was dull and aching in character. In a few weeks she began to have a similar but worse pain in the right foot, chiefly also on its outer border and in the heel. Many remedies and methods of treatment were tried without affording any continuing relief. They

included severe counter-irritation, temporary rest, galvanism ; and internally, gaultheria, salicylate of sodium, iodide of potassium, colchicum, etc. June 11, 1887, Dr. J. D. Deaver, of the surgical staff of the Hospital, stretched the posterior tibial nerve, making an oblique incision about two and one-half inches long between the internal malleolus and the tuberosity of the os calcis.

The right posterior tibial was the one operated upon, for at the time of the operation the pain in the right foot was more severe than in the left. The woman was kept in bed from six to seven weeks after the operation. Strange to say, the left foot got well, while the right, although much improved, is not yet entirely free of pain. This fact led some of those observing the case to think that possibly it was a hysterical case, for you may have a hysterical pain in the feet, as hysterical pain may have its seat anywhere. I think, however, that a more rational explanation is to be given of the recovery of the left foot : the woman was put to bed and kept absolutely quiet for six to seven weeks, and under the influence of rest the trouble subsided. The rest instituted before the operation was neither as absolute nor as complete as that after the nerve-stretching. This is an interesting therapeutic observation, and shows the great value of complete and long-continued rest in such cases.

Let us next determine the condition of this woman's feet at the present time. The proper way to examine a foot which is the seat of pain, is first to study it in a general way, eliciting the statements of the patient, and then to manipulate it by certain definite methods. First manipulate it with reference to the ankle and other joints. In this case there never was, nor is there now, any distinct pain in the ankle-joints. The metatarso-phalangeal joints should be examined in detail. At present I can elicit no pain in the left foot either by pressure or handling. The foot in the course of the examination should be squeezed laterally, as you see me do. By so doing, you will often not only bring out a particular sort of pain, but also perhaps the exact location of the lesion that causes pain. In the left foot this compression causes no pain. Examining now the right foot, I find

no pain in the ankle-joint. Squeezing the foot in the line of the metatarso-phalangeal articulations causes severe pain. Pressing each metatarso-phalangeal articulation vertically, I find severe pain in and about this joint of the fourth toe, and also in the corresponding joint of the great toe ; there is very little in the joints of the second and third toe, and none in the joint of the fifth toe.

As I have already said, it was supposed by some that this was possibly what, for want of a better name, we call hysterical pain. Against such a diagnosis are the facts that pain is present in different locations, and that it is increased by special manipulation ; that the pain in one foot gets well under a certain kind of treatment, while in the other foot, although abated, it continues. This woman has symptoms which indicate something real, and, temporarily at least, organic. Without doubt she is suffering from a local but somewhat diffused neuritis. Her weight, and the more or less depraved condition of her blood, have probably acted as causative factors.

A professional friend, a man weighing between two and three hundred pounds, consulted me informally with reference to a severe pain in his heels. The pain continued, and to a certain extent spread so as to involve a portion of both feet, although it was most severe in the heels. In view of this lecture, I wrote to him a few days ago, and he replied that, after trying various methods of treatment, the pain had disappeared since he had adopted shoes of a certain pattern. In this letter he states that he has had several patients who have complained of pains in the heel or in the feet, particularly across the instep and ball of the foot, and that these cases occurred especially in young men, who either wore shoes that were too tight or bad fitting, or who followed occupations which required them to be on their feet for a long time.

Pain in the feet is of great interest not only from the standpoint of a particular case like this, with a local cause and seat, but also because frequently it is the evidence of the beginning of some general or constitutional trouble. Such pain may be due to a number of conditions, as to a

local neuritis, periostitis, or arthritis, which is either rheumatic or gouty, and this is the conclusion jumped to in many cases; sometimes it is a correct conclusion, even cases in which acute redness or swelling are not present. In these cases, treatment will help decide the diagnosis.

I now have a patient under my care who has suffered from gout, and has also had acute rheumatism within a few years. A few months ago, he was taken with a pain at the junction of the tendo-Achilles with the bone on each side. Slight evidences of thickening were also present. The pain was so severe as to seriously interfere with his walking. Under the use of lithium, iodide of potassium, and arsenic, with galvanism and massage, the case is getting well with moderate rapidity.

The late Prof. S. D. Gross paid especial attention to this subject of pains in the feet, and as far back as 1864 published a paper on Pododynia, describing cases. In his *Surgery* a brief allusion to this subject will be found. He speaks of the fact that a large number of his cases of pains in the feet occurred in tailors, and he had begun to think that it was a tailor's disease; but further experience showed him that others exposed to similar causes developed the same trouble. Those among tailors most likely to be affected were cutters, who had to stand at their work for hours. His view was that in all probability it was due to periosteal or aponeurotic inflammation. "The soreness in pododynia," says Prof. Gross,* "is generally most severe in the sole of the foot, over the calcaneum and the ball of the great toe, or in the line of the metatarsal-phalangeal joints, parts which are particularly subject to pressure during the erect position. The hollow of the foot, however, occasionally participates in the suffering. The pain and tenderness are deep-seated, and are always aggravated by the pressure of the finger, and by walking and standing, which the patient is often obliged to forego in consequence. Instead of pain there is often a disagreeable tingling sensation in the parts. Little swelling attends the disease, and there is seldom any marked discoloration of the skin, except in the more severe forms of the

*System of Surgery.

affection, when the surface occasionally exhibits a mottled or purplish appearance, evidently dependent upon a congested condition of the capillary vessels. A sense of coldness often pervades the entire foot ; and in some cases the disease extends to a considerable distance up the leg. Both feet often suffer simultaneously. The general health is seldom materially, if indeed at all, affected.

"What the pathology of pododynia is, I have never been able to determine, as no opportunity has been afforded in dissecting the parts. The probability is that it is a form of inflammation, chiefly of the periosteum and plantar aponeurosis, attended with disordered condition of the vaso-motor nerves and an inordinate determination of blood. In the cases which have fallen under my observation, it has not been in my power to trace any connection between the disease and gout, or between it and rheumatism."

Dr. Sayre* treats at length of a certain class of cases of pain and weakness of the foot or feet, with flattening of the arch, of which I have seen many examples.

"When the arch of the foot," he says, "is properly supported by a healthy tibialis-anticus muscle, the articulating facets of the bones composing it press upon each other, so as to sustain the weight of the body without producing pain. These articular cartilages having no blood vessels or nerves of their own, are insensible to pressure ; but, when the arch of the foot loses its proper support in consequence of a complete or partial paralysis affecting the tibialis-anticus muscle, these articulating facets no longer press upon each other equally, but are made to tilt a little, and the pressure is brought to bear upon the edges of the articular surfaces, where the supply of blood vessels and nerves is most abundant, which gives rise to indescribable pain and suffering with every step that is taken. The pathology of these cases is, first, paralysis of the anterior tibial muscle ; second, settling of the arch of the foot ; third, abnormal pressure upon the edges of the cuneiform and scaphoid bones. The pressure in this abnormal position produces periosteal, it may be

* Orthopædic Surgery and Diseases of the Joints, by Lewis A. Sayre, M.D.

osteal, or synovial inflammation, and then it is that the case is so often regarded as one dependent upon constitutional disease."

Dr. Sayre's treatment is the division of tendons in some cases, and the use of a shoe with a steel sole, which is a well-known treatment for valgus. My own experience with some cases of a milder type is that it is not always necessary to use a steel sole, and that the trouble can be remedied by having a shoe with a leather sole made in a peculiar way. The heel should be low rather than high, and should run from half an inch to one inch further under the foot than is usual. In order to take away from the clumsy appearance of such a shoe, the heel can be cut away a little from behind. A thickness of stiff leather should be put in the position of the hollow of the foot, and another should extend up the inner side of the shoe.

PAIN IN THE FOOT DUE TO LOCAL NEURITIS AND BONE
PRESSURE—DR. THOMAS G. MORTON'S OPERATION.
NERVE-STRETCHING AND NERVE-SECTION.

While upon this subject, I wish to give you an experience from my private practice which illustrates the value of another method of treatment, which some time ago I was inclined to try in the present case, but did not because of the diffuseness of the pain. You will occasionally meet with cases in which for months, or it may be years, pain will be localized in one foot and perhaps in a certain spot. Sometimes the pain is absolutely excruciating. On a winter's day even, the patient will stop in the street and will remove his shoe, or will sit down anywhere for a time, in order to get relief. This pain is present more or less all the time. I have certainly had from five to ten such cases during a few years. If they are examined closely, it will be found that in some of them the pain is localized to some one part of the foot. One point is the spot which in our first patient is the most painful—about the metatarso-phalangeal articulation of the fourth toe. Dr. Thomas G. Morton, the distinguished Philadelphia surgeon, has paid great attention to the subject of pain in the feet from the surgical standpoint. About

ten years ago he described several cases of this kind, and he has devised an operation for their relief. I think that his view as to the causation is correct, at least in a certain number of cases. As I have already pointed out, one of the spots at which pain is most likely to be felt is about the metatarso-phalangeal articulation of the fourth toe. Dr. Morton gives an anatomical reason for this location of pain. So important is the matter and so ingenious the explanation, that I think it is best to quote his exact words :

"The occurrence of the neuralgia," says Dr. Morton,* "may be understood by a reference to the anatomy of the parts. The metatarso-phalangeal joints of the first, second, and third toes are found on almost a direct line with each other, while the head of the fourth metatarsal bone is from one-eighth to one-fourth of an inch behind the head of the third, and the head of the fifth is from three-eighths to half an inch behind the head of the fourth ; the joint of the third, therefore, is slightly in advance of the joint of the fourth, and the joint of the fifth is considerably behind the joint of the fourth.

"The fifth metatarsal joint is so much posterior to the fourth that the base of the first phalanx of the little toe is brought on a line with the head and neck of the fourth metatarsal, the head of the fifth metatarsal being opposed to the neck of the fourth.

"On account of the character of the peculiar tarsal articulation, there is very slight lateral motion in the first three metatarsal bones. The fourth has greater mobility, and the fifth still more than the fourth, and in this respect it resembles the fifth metacarpal. Lateral pressure brings the head of the fifth metatarsal and the phalanx of the little toe into direct contact with the head and neck of the fourth metatarsal, and to some extent the extremity of the fifth metatarsal rolls above and under the the fourth metatarsal.

"The mechanism of the affection now becomes apparent when we consider the nerve supply of the parts. The branches of the external plantar nerve are fully distributed to the little toe and to the outer side of the fourth ; there

* Philadelphia Medical Times, October 2, 1886.

are also numerous branches of this nerve deeply lodged in between these toes, and they are liable not only to be unduly compressed, but pinched by a sudden twist of the anterior part of the foot. Any foot-movement which suddenly may displace the toes, when confined in a shoe, may induce an attack of this neuralgia. In some cases no abnormality or other specific cause for the disease has been detected."

Dr. Morton's operation consists in making an incision usually about two inches in length along the outer edge of the tendon of the toe most affected ; then opening the articulation and removing the adjoining portions of the metatarsal bone and phalanx. Under antiseptic precautions the operation is comparatively trifling. It has been performed from the sole of the foot, but the operation from above is preferable as the bones are thus more easily reached.

Let me now recur to the illustration from my private practice of a case successfully treated by this operation. The patient kindly wrote out for me the history of her case, and from this and my private note-book I have prepared the following account :

In July, 1877, in jumping from one stone to another three or four feet lower, her right foot slipped and she came, with all her weight upon her left foot, upon a sharp point of rock, twisting the ankle. The sole of the shoe was cut through, but the foot was not bruised at all, and it was for only about a week that she could not walk straight. During the next two years, at intervals of from two to eight weeks, she would have a peculiar pain in the foot, which would only last about two or three days.

In 1879 she hurt her foot again in the same way, and then pain was seldom absent longer than about a week, and each time would be more severe than the last. In 1881 the pain became constant, never being absent longer than an hour. For two weeks it would be so intense that she would be nearly frantic, then for about a week or ten days it would be less severe.

The pain was a dull, heavy, sickening ache, from the foot to the hip, and with a sharp, hard pain through the foot. When easier the ache would only be in the foot, but the sharp pain was there constantly.

Rising in the morning, the patient could not put her weight upon her foot, until she had taken hold of the foot suddenly from the top and pressed it hard together, and held it in both hands with all her strength for several minutes.

Many plans of treatment were tried in this case—gouty and rheumatic remedies were used, and many forms of external application, without success. Painting with iodine, anodyne ointments and liniments, galvanism, and temporary rest, were alike unsuccessful. Persistent blistering gave the most relief. The patient was kept in a sitting or recumbent position for several weeks, while successive blisters were applied to the sole of the foot. She was benefitted by this treatment probably as much from the rest as from the blistering, but in a short time the pain returned with all its former severity.

I now concluded it would be best to have an operation performed for the relief of the condition which was scarcely endurable. Dr. D. Hayes Agnew was called in consultation, and, after etherization, excised the end of the third metatarsal bone and the approximating portion of the phalanx. The patient had some little trouble in the after treatment of the wound, but in about three months everything was completely healed and the pain much better. About a year after the operation the foot was roughly trodden on; inflammation ensued, and an abscess formed and discharged, but healed without special difficulty. The patient writes to me this week that she has not had the slightest trouble for a year and a half, and has walked as much as twelve miles at a stretch without producing any trouble in the foot.

Another private patient, a lady of about sixty years of age, tells me that forty-two years ago, after stepping on a stone, she was suddenly seized with a pain near and in the line of the fourth toe. The pain was extreme, and was accompanied by some swelling and redness. She was compelled to keep off her feet from three to four weeks, and suffered considerably for some weeks afterwards. Ever since, at times, averaging at least once a year, she is seized suddenly with pain, sometimes very severe in the same

locality. The pain usually disappears with rest and care in using the foot.

Let me say a word or two more about operative procedure in such cases. As you will remember, the posterior tibial nerve, after supplying the muscular, osseous, articular, and cutaneous tissues of the back of the leg and ankle, divides upon the body of the calcaneum into the internal and external plantar nerves, which supply the sole of the foot and adjoining tissues. The internal plantar nerve has a distribution resembling that of the median nerve in the hand, the external that of the ulnar nerve in the hand. I here show a diagram illustrating the distribution of the two plantar nerves. The internal planter nerve divides into two branches called the internal and the external. The internal branch is also called the median branch and first digital nerve; the external, also called the lateral branch, divides on about a line with the tarso-metatarsal joint into the second, third, and fourth digital nerves. The first, second, third, and fourth digital nerves supply the first, second, and third toes, and the internal aspect of the fourth toe. The external plantar nerve divides into internal and external branches, which supply the little toe and outer aspect of the fourth toe. This is simply, in general terms, the distribution of these nerves. Numerous small branches are lodged in various positions.

I think when the trouble is limited to the branches of the external plantar nerve going to the fourth and fifth toes, it may sometimes not be necessary to perform an operation so radical as the excision of the articulating faces of the bones. The nerve itself might be resected or stretched. This was Dr. Deaver's idea in connection with our first case. The posterior tibial nerve was stretched in the hope of avoiding excision of the joint. For some reason, however, this operation in all cases does not succeed so well as excision. Nerve stretching is not so good an operation for the relief of pain due to neuritis as for true neuralgia, or where certain central troubles are the cause of pain. I think that section is better than stretching if you are sure that you can locate the particular branch of the particular nerve going to

the particular spot affected. Of course, certain objections to the operation of nerve section are apparent. It may produce a paralytic condition of the foot which may interfere with its usefulness, but it is nevertheless sometimes a desirable procedure.

In 1882, a young lady was under my care at the University Hospital. She suffered with pain, burning and tingling sensations, marked and very distressing, chiefly along the outer side of the top of the foot. Many measures of treatment were tried without success, including counter-irritation, galvanism, rest, and rheumatic and gouty remedies. Eventually, two operations were performed by Dr. H. R. Wharton. Early in July, he cut down and stretched the musculo-cutaneous and external saphenous nerves, an operation which was followed by a slight temporary diminution of pain. August 18, 1882, he excised one and a half inches of the external saphenous nerve, and peroneal communicating nerve, behind the external malleolus. This operation was followed by marked diminution of pain, and after a long time the patient recovered.

PLANTER NEURITIS (OR NEURALGIA).

Dr. C. H. Hughes, of St. Louis, under the name of plantar neuritis, or neuralgia, has described a painful affection of the foot, which may be due to a variety of causes. We had in this Hospital, not long ago, a patient with caisson disease. This man, while working in a caisson, during the building of a bridge across the Schuylkill River, was taken down with symptoms of this affection. He suffered terrible pains in the legs, had various head symptoms, was paralyzed, and went through the whole series of phenomena of caisson disease. He was paralysed for months, but finally recovered and left the Hospital. Among other symptoms, he had at one time excruciating pains in the feet.

Dr. Hughes speaks as follows of this affection :

“It comes on as a sequel, usually of a low form of blood depraving fever, like typhoid or protracted malarial, with typhoid-like depression, or in the latter stages of phthisis ; but it may be the sequel of an exhausting, long-continued

rheumatism, or possibly of a badly managed or neglected and chronic gonorrhœa, as Ross asserts, though I have never seen this as a result of that disease. It appeared as a conjoint symptom in some cases of caisson disease at the time of the building of the St. Louis bridge, and I have seen it follow upon a residence in the high altitudes of Colorado and an attack of the so-called mountain fever of that region. It comes upon a nervous organization, shattered and tremulous and choreic, and the painful paroxysms are agonizing. The patient cries out with pain, and often cannot rest at night, even after prolonged wakefulness, without powerful anodynes. The slightest touch, such as the application of local anodynes with the hair pencil, to the painful parts, often cannot comfortably be borne. A peculiar burning sensation, without themometric evidence, accompanies the pain. The pain is usually localized in the balls and the tips of the three toes supplied by the internal plantar nerve, and in the heel and plantar arch of the foot, but sometimes implicates also the two smaller toes, which are supplied from the external branch of the plantar nerve, the fifth toe being supplied exclusively by the external plantar, while a filament from the internal joins with the external in giving the fourth its æsthesiodic supply.*

The following case, evidently one of neuritis occurring in the course of typhoid fever, is interesting in connection with these remarks of Dr. Hughes on plantar neuritis as a sequel of low fevers. Such cases indeed are not rare, but are often not understood.

The patient, a young man, had typhoid fever in July, 1884. The attack was a severe one, confining him to the bed for six weeks entirely, and partially for two weeks longer. His convalescence was slow. During the first two weeks of the fever he had marked brain symptoms and was unconscious of his surroundings. On coming to himself at the end of this time, he began to suffer severely with burning, tingling, and numbness of the feet, which were also hyperæsthetic, so that he could scarcely

* Western Medical Reporter, April, 1887, and Alienist and Neurologist, April, 1887.

bear the weight of the bed clothes upon them. The condition was most marked across the toes and back of the feet near the toes. The pain and uncomfortable sensations were temporarily relieved by friction.

On getting out of bed, he found that he was weak in both legs, and for a long time had a paretic or ataxic gait. He was troubled with numbness and tingling from the upper part of the thighs to the feet. Both feet and legs were tender to pressure. The feet showed a tendency at times to swell, and on exposure became white and mottled; they also showed a marked tendency to sweating. The soles of the feet were exceedingly tender.

As the patient grew stronger, the condition of his legs and feet gradually improved, but for many months he suffered greatly. The pressure of the feet upon the floor when standing caused him intolerable discomfort. He went about, however, suffering more or less all the time. He had shoes of half a dozen different patterns made, in order, if possible, to procure some relief. Squeezing the foot, either vertically or laterally, caused great pain. The numbness and tingling disappeared slowly from above downwards, a marked girdling or encasing sensation being usually present at its upper line. Numerous corns formed upon his feet, he not having been subject to them before his sickness. His feet felt as if they were cramping or contracting downwards, and at times assumed a condition of slight plantar flexion.

Although more than three years have elapsed, this gentleman still has some numbness in both feet, particularly across the dorsum of both great toes and the adjoining sides of the second toes. If he walks much, he has a contracting sensation in the balls of both feet.

Possibly a more prompt recovery would have taken place in this case if the patient had been taken off his feet, and had had gaultheria, salicylate of sodium, or small doses of mercury with tonics, internally, with counter-irritation and galvanism locally.

ERYTHROMELAGIA.

A disease, of which I have seen five or six cases, is in-

cluded by Dr. Hughes under the head of plantar neuritis, although I do not think properly. It was described a few years ago by Dr. S. Weir Mitchell,* under the name of erythromelalgia, which term indicates pain and redness. This is a most remarkable affection, and differs somewhat from those already described. These cases begin in much the same way, with pain in the heel, or in the sole, or in a toe, and then the pain will increase and multiply. It augments both in extent and intensity. Later, another phenomenon is added, that is, a distinct flushing, or even a reddish or purplish appearance of the feet. The moment the feet are allowed to assume a dependent position, a horrible pain starts in them, and almost at once there appears a slight flushing, then a diffused redness, and finally a mottled, purplish appearance spreads over the feet. One of the patients described in Dr. Mitchell's paper had been under my own observation. This man was perfectly comfortable so long as the feet were kept elevated. I remember very well the first time that I saw him. He was lying on a lounge, with the head and feet about in the same place, and was suffering no pain. In order to examine his feet, the leg was allowed to hang over the side of the lounge. In a moment it begun to change color, and instantly the patient was in agony. As long as the horizontal position was maintained he was free from pain and discomfort. This is not always the case in neuritis. Erythromelalgia, in some cases at least, is, I believe, disease of spinal origin. Sometimes it may be due to a neuritis, or even possibly to some disease of the veins. In the following case of multiple neuritis, or poliomyelitis, it was present as a symptom.

S. H., aged 40, white, born in Ireland, is a dressmaker. She has had syphilis, and drinks. She was always well until about five years ago, when she had an attack, which she described as similar to the present, but from which she recovered in a few months. Six years before this she had had still another similar attack.

About four weeks before admission to the Hospital, she

* American Journal of the Medical Sciences, 1878.

began to have pains, of a sharp shooting character, in the feet and legs, with burning and flushing; these were followed by a feeling as if the legs were asleep. The pains were worse at night. Just before admittance, she began to have contractures in both legs, and both were atrophied.

The knee and muscle jerk are abolished. She has always had control over the bowels and bladder. Sensation is good, and she has no hyperæsthesia. She has contractures of the fingers of the left hand. Her legs feel numb, and she has severe pain in them occasionally. She has pain on pressure along the trunks of the posterior and anterior tibial nerves at their upper parts. They are somewhat sensitive towards the foot, though not as much so as nearer their origin.

In one case of multiple neuritis or general poliomyelitis, a woman who was confined to her bed for fourteen months, when gradually recovering, the moment she attempted to put the legs in a hanging position, exactly the same thing happened as we see in erythromelalgia. The feet would begin to pain, turn red, and then purple. This tendency continued, with gradually decreasing severity, for two or three months, when it entirely disappeared.

FEET PAINS IN POSTERIOR SPINAL SCLEROSIS, AND IN SOME OTHER FORMS OF CHRONIC SPINAL DISEASE.

It is well known that one of the very earliest symptoms of posterior spinal sclerosis is the occurrence of shooting, lancinating, or lightning-like pains, usually in the lower extremities. The foot is not the commonest seat of the initial occurrence of these pains, but it is by no means an infrequent locality. Pain in the heel is somewhat common. Spitzka, in the *American System of Practical Medicine*, speaks of one patient, who, after experiencing initial symptoms for over a year, woke up at night with a fulminating pain in the heels, which recurred with the intensity of a hot spear thrust and with the rapidity of a flash every seven minutes. A private patient, a lady 46 years old, who came to me first a few weeks ago, has been suffering, off and on,

for four years with cutting pains in the right heel, calf and thigh, and sometimes in the first and fourth toes. These pains preceded other symptoms, which are now tolerably well developed, such as double vision, difficulty in holding her urine, diminished knee jerk, and slight ataxia.

For the sake of actual illustration, I show you here an ataxic patient from the Women's Nervous Wards. She is 42 years old. About five years ago, she was kicked in the left side, as the result of which she was confined to her bed for a week. Soon after she had a severe uterine hæmorrhage. After this she did not menstruate for two years, then she menstruated regularly till September, 1886, then her menses ceased entirely. Soon after she received the kick, she commenced to have sharp pains in her limbs and feet, and later in the trunk and fingers. Gradually she developed the typical symptoms of posterior spinal sclerosis—ataxia, failing sight, Argyle-Robertson pupils, anæsthesia, and paresthesia, abolished knee-jerk, etc. She sometimes has sharp pains in her feet; a few days ago, for instance, she had a severe pain in the outer side of her left foot just in front of her heel, as if a knife had been suddenly thrust into the spot and then suddenly withdrawn. This pain sometimes runs along the outer side of her foot ending in the ball of the fifth toe.

Of course, I could furnish from my note-books many similar illustrations of pains in the feet in ataxic patients, but it would be a tiresome and unnecessary repetition. My only purpose in calling attention to these pains in this lecture, is to emphasize the fact that such heel or feet pains are sometimes very early, and even initial, symptoms of this affection, and therefore the physician should be on his guard and not make an improper diagnosis. Such pains are often supposed to be rheumatic or gouty, or to be evidences simply of a local neuritis from an unknown cause.

Posterior spinal sclerosis is not the only form of chronic spinal disease in which feet aches or pains are among the early or initial symptoms, but in disorders other than locomotor ataxia, the pains are usually not simple in character,

but are associated with other conditions, as of spasm or vaso-motor and trophic conditions.

About three years ago a lady, 60 years of age, consulted me about a burning pain or sensation along the outer border of the left foot from the toe to the ankle. This was accompanied by a peculiar jerking upwards of the left great toe, and sometimes of the second toe. Her fingers also, sometimes, felt stiff, and she was nervous and apprehensive, but had no other positive symptoms. During the last three years, however, the case has become one of well marked disseminated sclerosis.

In 1884, I was consulted by a gentleman from Illinois, 52 years old. Three years before coming under observation, a slight burning sensation was felt under the nail of the second toe of the right foot. This sensation increased, and soon became very painful. One by one, all the other toes of the same foot were affected in a similar way, and at the time he came to see me the painful disease had extended until it had involved the second, third, and fourth toes of the left foot. The affected toes were of a bluish red color, and the feet were mottled to a short distance above the roots of the toes. So great was his suffering, that in hope of relief he had the first toe affected amputated in January, 1883. The patient did not remain under my care, but I was satisfied as the result of my examination, that he was the victim of a chronic nervous disease, probably of the spinal trophic centres.

REFLEX OR TRANSFERRED PAINS IN THE FEET.

In order to round out my subject, let me say, in conclusion, that occasional pains in the feet are reflex or transferred. Of these Dana* speaks as follows: "Studies of the cause of reflex pains in the feet show that they may be referred in almost all cases to irritation of the genito-urinary tract, and occur more often in the male ("Med. Record," July 25, 1885). The pains of uterine disorder when reflected

* New York Med. Journal, July 30, 1887.

down, appear rarely to go below the knee ; in other words, they affect the lower branches of the lumbar plexus, and not the sacral nerves. It has been stated that pain in the heels may be caused by ovarian abscess. In my experience, such pains are due to lithæmic and neurasthenic conditions, and will be relieved by remedies addressed to such states. It may be said in general, then, that pelvic irritations are felt most frequently in the upper and short branches of the lumbar plexus, next perhaps in the intercostal nerves and upper cervical nerves, then in the trigeminus, and last in the hands and feet."